REMARKS

Sincere appreciation is expressed to the examiner for his careful search and reading of the Cathey patent, leading to the allegation that the claims of this application could reasonably be interpreted as encompassing the essentially irrelevant structures and methods of Cathey. Whereas it is believed no skilled worker could reasonably read the claims of this application in conjunction with the specification to conclude that the rejected methods are somehow anticipated by Cathey, in order to expedite prosecution, the scopes of the claims have been further clarified to make it an even simpler matter to conclude that Cathey is not anticipatory.

Claims 48, 94, and 95 encompass the language already found allowable by the examiner in original claims 71, 70, and 60, respectively. The clarifying language of new claims 96 and 97 (identical to claim 48 except for the last phrase) is equally clearly patentable. The proviso clause in claim 96 is not new matter under the holding of *In re Johnson*, 558 F.2d 1008, 194 USPQ187 (CCPA 1977), especially in view of the fact that glass array members are explicitly disclosed, e.g., at page 11, line 20. The language in claim 97 is clearly supported by the specification overall which is drawn preferably to methods which can be used to facilitate the performance of assays. See especially, for example, especially the paragraph bridging pages 26 and 27, among others.

Most of the examiner's suggestions for linguistic improvements to further clarify the already clear claims, have been incorporated above. Again, appreciation is expressed for the examiner's careful reading of the claims.

In order not to facilitate the avoidance of infringement by competitors, applicant chooses to maintain the current 1-step nature of the claims. However, the examiner's suggestions for clarifications have been incorporated in the new language modifications, which do not affect claim scope. With this format, as long as a single entity at least "sections" a bundle in accordance with the claims, there will be infringement.

Regarding the examiner's point C on page 5 of the office action, reference is made to page 14, line 34 through page 15, line 2, to the sentence bridging pages 16 and 17, among other locations. The term "alignment member" is clear in context as including any non-array member which facilitates alignment in any direction, among other things of bundle members in forming a bundle, such as a coherent bundle as disclosed for instance. Item D also is very clear from the specification,

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e.g., pages 36-37, which discuss precisely what is intended. It is clear that such embedded information is data apart from the lumens in accordance with the precise terms of claim 50, which recites that these are "spatially separate from said array members."

Similarly, items F-H of the office action raise issues which, in context, are really not issues to a skilled worker. Note, e.g., page 6, lines 22-24 and page 17, lines 29-32, etc. These make clear that smooth cutting refers to cutting which achieves a surface essentially in one plane. Any surface shape other than planar will inevitably increase surface area, an effect which can be useful in performance of assays. This is a simple mathematical fact which would be ultra clear to a skilled worker. The passage quoted from page 17 does disclose a variety of ways of increasing the surface area.

With respect to item I, the term "peptide-nucleic acids" ("PNAs") is well known to those skilled in the art. It denotes polynucleotides in which the backbone is formed in whole or part of peptide bonds in place of the phophodiester bonds that typify naturally occurring polynucleotides. PNAs have the same base pairing specificity as their phosphodiester counterparts; but, they are more resistant to nuclease degradation and PNA-polynucleotide duplexes are more stable than equivalent duplexes formed by phosphodiester polynucleotides, and PNAs thus are widely used as oligomeric hybridization probes, *inter alia.* There is no indefiniteness associated with this term. Finally, as for item J of the office action, the examiner is referred to MPEP 2173.05(h) for the PTO's latest position. This states that "double inclusion" is not a sufficient basis for objection or rejection of a claim.

The expression "homogeneous compositions" is clearly supported in the specification, not only in general by the methods' recitation of the production of "replicate" arrays, but also explicitly, e.g., at page 12, lines 19-21, for example, especially clearly in conjunction with page 11, line 21.

Finally, it is respectfully submitted, the enablement rejection is untenable. The examiner alleges that the scopes of "structural members" and "array members" are so large that the claims are not enabled. This is clearly not true. This invention relates to the methods and structures recited in the claims which facilitate, e.g., the performance of a wide variety of assays. This is accomplished through use of the interrelationships recited in the claims, including those between array members (e.g., analyte binding reagents, which are the "active" elements in assays) and structural members which are used to position the array members for accuracy in assaying. The various array members,

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e.g., analyte binding reagents, *per se* (e.g., polynucleotides, polypeptides, etc.) and the structural members (e.g., glass, plastics, etc.) are themselves not only well known, but also well known for use in conjunction with each other in performing a wide variety of conventional assays. Thus, which structural elements and which array members are compatible with each other are extremely well known to skilled workers. It is not seen how there can reasonably be any problem in this regard. To the extent one can conger up incompatibilities between the broad scope of encompassed array members and the broad scope of encompassed structural members, these would readily be avoided by skilled workers, which means that there is no enablement problem. See *In re Marzocchi*, 169 USPQ 367 (CCPA 1972). ("However, we see no basis to conclude that the ready avoidance of this result would not be within the level of ordinary skill in the art. Compare *In re Skrivan*, 57 CCPA 1201, 427 F.2d 801, 166 USPQ 85 (1970).")

It is also respectfully submitted that the examiner is incorrect in asserting there is no guidance in the specification as to the manufacture of the structural members or any other of the recited features. The lack of actual working examples is not in any way proof of nonenablement, See *In re Marzocchi* above. The specification's guidance is, in fact, more than adequate with respect to each of the aspects mentioned by the examiner. For structural members, see pages 14-16; for the requirements of the structural members being placed into bundles, see, e.g., pages 16-17. These make clear that the structural members are to be "coherently aligned" so that they remain in the necessary positions for the assays to be performed. See, e.g., page 16, lines 22-24, page 21, lines 13-15, among other locations. As for the assembly of such bundles, see page 21, for example. Pages 23-24 detail various well known methods for sectioning of bundles to form wafers. Specifically with respect to fibers, one particular method of carrying out the claimed invention, see pages 37-40, among others.

Applicant has provided a thorough disclosure of how to make and use all aspects of the claimed invention. This disclosure is presumptively accurate and objectively enabling under Marzocchi. The examiner has not provided any reasons or evidence to doubt that the invention is enabled in its full scope. Thus, the rejection must be withdrawn.

Being filed herewith is a copy of USP 6129896 having an effective filing date of December 17, 1998, well after the effective filing date of the claims of this application. Consequently, it is not prior art. Previously pending claims as well as the amended versions thereof are drawn to the same

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invention as the claims of USP 6,129,896. This is believed readily apparent. The same is true for the earliest claims in applicant's family, i.e., those of the October 16, 1997 provisional application (60/062,203) whose benefit is claimed and which is incorporated by reference in the first sentence of the application. In view of the much earlier filing date of applicant's invention versus that of the cited patent, applicants feel it just that a patent be issued to them immediately. If this is also the PTO's determination, applicants plan to pursue an interference with the '896 patent via a continuation application.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

Anthony J. Zelano, Reg. No. 27,969
Attorney for Applicant(s)

MILLEN, WHITE, ZELANO
& BRANIGAN, P.C.
Arlington Courthouse Plaza 1, Suite 1400
2200 Clarendon Boulevard
Arlington, Virginia 22201
Telephone: (703) 243-6333
Facsimile: (703) 243-6410

Attorney Docket No.: LAMILL-2

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace the paragraph beginning on line 1 and continuing through line 3 with the following amended paragraph:

[[]This application [is a continuation in part] claims benefit of US Provisional Application No. 60/062,203 filed on 16 October 1997 the entirety of which, by reference, is herein incorporated.[]]

Please replace the paragraph beginning on page 7, lines 11 through 13 with the following amended paragraph:

A further preferred object of the invention is to provide a method for detecting a plurality of analytes, comprising the step of cross-sectioning a plurality of [aligne] aligned array members that comprise a plurality of analyte-binding reagents.

IN THE CLAIMS:

Please amend the claims as follows:

48. (Amended) A method of making replicate arrays, comprising repeatedly sectioning a bundle of aligned array members to make wafers comprising replicate arrays, wherein:

each array comprises structural members each of which has a lumen therethrough which is continuously enclosed thereby;

[the] each array [members are] member is a homogenous [compositions] composition disposed within a separate lumen of a structural [members, each array member being in a separate lumen continuously enclosed in a structural member and] member which [extending] extends from a first to a second wafer surface formed by said sectioning; and

each structural member and each array member [being] are aligned in the bundle parallel to an alignment axis and [each occupying] occupy a defined position in the two dimensions orthogonal thereto;

wherein the array members comprise analyte binding reagents.

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50. (Amended) A method according to claim 48, wherein each wafer ~~further~~ comprises embedded information spatially separate from said array members.

52. (Amended) A method according to claim 48, wherein array members completely fill the lumen and form part of [the] said first and second [major] wafer surfaces.

64. (Amended) A method according to claim 48, wherein the array members have a [cross-sectional] surface area of about 1.0 to about 1,000,000 μm^2.

66. (Amended) A method according to claim 48, wherein the density in the array is about 10 to about 100,000 array members per square centimeter of total surface area [at] of the [assay] array.

71. (Amended) A method according to claim [48] 97, wherein the array members comprise analyte binding reagents.

76. (Amended) A method according to claim 75, wherein the polypeptide-specific binding reagents are polyclonal antibodies, monoclonal antibodies, single chain antibodies, or antigen-binding fragments of antibodies.

79. A method according to claim 71, [wherein] further comprising exposing a sample to the array and detecting the presence of binding to the analyte binding reagents [is detected] using radioactivity, fluorescence, phosphorescence or chemiluminescence.

77. A method according to claim 71, wherein analyte binding reagents are one or more of a nucleic acid, a polynucleotide, a DNA, an RNA, an oligonucleotide, a ~~protein~~ peptide-nucleic acid, an aptamer, a ribozyme, a nucleic acid-binding polyamide, a protein, a peptide, a polypeptide, a glycoprotein, an antibody, an antibody-derived polypeptide, a receptor protein, a fusion protein, a mutein, a lipid, a polysaccharide, a lectin, a ligand, an antigen or a hapten.

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